Please amend the claims as follows:

In the Claims

1. (original) A power supply system comprising:

a frame;

a power input to receive input power from a power source;

a power output to provide output power to a load;

at least one battery module mounted in the frame and having a battery output that provides battery power;

at least one power module mounted in the frame and coupled to the power input to receive the input power, coupled to the battery output to receive the battery power, and coupled to the power output to provide the output power from at least one of the battery power and the input power;

a first controller coupled to the at least one power module; and

a second controller, substantially similar to the first controller, coupled to the first controller, and coupled to the at least one power module;

wherein each of the first controller and the second controller is configured to determine operational parameters of the power supply system and store a first set of parameters determined by the first controller and a second set of parameters determined by the second controller.

2. (original) The power supply system of claim 1, wherein the first controller functions as a main controller in the power supply system and controls the output power of the power module, and wherein the first controller and the second controller are configured to allow the second controller to control the output power upon failure of the first controller.

3. (original) The power supply system of claim 2, wherein the at least one power module includes a plurality of power modules, and the at least one battery module includes a plurality of power modules.

4. (original) The power supply system of claim 1, further comprising a communications bus coupled to the first controller, the second controller and the at least one power module to provide duplex communication between the first controller, the second controller and the at least one power module;

wherein the first controller is configured to function as master of the communications bus and control communications on the bus, and the second controller is configured to function as master of the communications bus upon failure of the first controller.

5. (original) The power supply system of claim 4, wherein each of the first controller and the second controller includes a main processor, an internal communications bus coupled to the communications bus through a relay, and a memory device, coupled to the internal communications bus, that stores operational parameters of the power supply system, and wherein the main processor in the second controller is configured to open the relay in the second controller and send updated operational parameters to the memory device over the internal communications bus.

6. (original) The power supply system of claim 1, wherein the power input is configured to receive input power having a first input phase line, a second input phase line and a neutral input line, wherein the first controller is coupled to the power input and configured to detect an input phase difference between the first input phase line and the second input phase line, and to control the power module to provide output power having a first output phase line, a second output phase line and a neutral output line, with an output phase difference between the first output phase line and the second output phase line substantially equal to the input phase difference.

7. (original) The power supply system of claim 1, wherein each of the first controller and the second controller includes a cold start button, and wherein the power supply system is configured to be powered on from battery power with no input power present when one of the cold start buttons is activated by a user.

8. (original) The power supply system of claim 7, wherein the power supply system is configured such that activation of the cold start button powers on the power supply system with no input power present, and with substantially zero current from the at least one battery module prior to activation of the cold start button.

9. (original) The power supply system of claim 1, wherein the first controller is coupled to the power input and is configured to detect input voltage and input current, and to reduce input current draw of the power supply system upon detection that the input voltage is less than a predetermined threshold.

10. (original) The power supply system of claim 9, wherein the first controller is configured to reduce battery charging current in the power supply system upon detection that the input voltage is less than the predetermined threshold.

11. (original) The power supply system of claim 1, further comprising a four-quadrant power meter coupled to the power output that determines output power of the power supply system.

12. (original) The power supply system of claim 1, wherein the at least one power module includes a two-quadrant power meter that determines output power of the power module.

13. (original) The power supply system of claim 1, further comprising an output fuse coupled to the power output, and a detection circuit, coupled to the output fuse and to the first controller that detects a voltage across the output fuse.

14. (original) The power supply system of claim 1, wherein each of the first controller and the second controller are adapted to receive an input signal from the frame, and based on a state of the input signal, to function as a main controller or a redundant controller.

15. (currently amended) The power supply system of claim 1, wherein the first controller includes a memory device, and is configured to sense an output voltage at the power output, and compare the output voltage with upper and lower threshold levels derived from data contained in the memory device to determine if the output voltage is within a predetermined range.

16. (currently amended) The power supply system of claim 15, wherein the first controller is configured to sense an output current at the power output, compare the output current with a short circuit current value, compare the output voltage with an output short circuit voltage value, and provide indication of a short circuit present at the output if the output current exceeds the short circuit current value and the output voltage is less than the output short circuit voltage value.

17. (original) A power supply system comprising:

a power input to receive input power from a power source;

a power output to provide output power to a load;

at least one battery module having a battery output that provides battery power;

at least one power module coupled to the power input to receive the input power, coupled to the battery output to receive the battery power, and coupled to the power output to provide the output power;

a first controller coupled to the at least one power module; and

a second controller, coupled to the first controller, and coupled to the at least one power module; and

a communications bus coupled to the first controller, the second controller and the at least one power module to provide duplex communication between the first controller, the second controller and the at least one power module;

wherein the first controller is configured to function as master of the communications bus and control communications on the bus, and the second controller is configured to function as master of the communications bus upon failure of the first controller.

18. (original) The power supply system of claim 17, wherein the first controller functions as a main controller in the power supply system and controls the output power of the power module, and wherein the first controller and the second controller are configured to allow the second controller to control the output power upon failure of the first controller.

19. (original) The power supply system of claim 18, wherein the at least one power module includes a plurality of power modules, and the at least one battery module includes a plurality of power modules.

20. (original) The power supply system of claim 17, wherein each of the first controller and the second controller includes a main processor, an internal communications bus coupled to the communications bus through a relay, and a memory device, coupled to the internal communications bus, that stores operational parameters of the power supply system, and wherein the main processor in the second controller is configured to open the relay in the second controller and send updated operational parameters to the memory device over the internal communications bus.

21. (original) The power supply system of claim 17, wherein the power input is configured to receive input power having a first input phase line, a second input phase line and a neutral input line, wherein the first controller is coupled to the power input and configured to detect an input phase difference between the first input phase line and the second input phase line, and to control the power module to provide output power having a first output phase line, a second output phase line and a neutral output line, with an output phase difference between the first output phase line and the second output phase line substantially equal to the input phase difference.

22. (original) The power supply system of claim 17, wherein each of the first controller and the second controller includes a cold start button, and wherein the power supply system is configured to be powered on from battery power with no input power present when one of the cold start buttons is activated by a user.

23. (original) The power supply system of claim 22, wherein the power supply system is configured such that activation of the cold start button powers on the power supply system with no input power present, and with substantially zero current from the at least one battery module prior to activation of the cold start button.

24. (original) The power supply system of claim 17, wherein the first controller is coupled to the power input and is configured to detect input voltage and input current, and to reduce input current draw of the power supply system upon detection that the input voltage is less than a predetermined threshold.

25. (original) The power supply system of claim 24, wherein the first controller is configured to reduce battery charging current in the power supply system upon detection that the input voltage is less than the predetermined threshold.

26. (original) The power supply system of claim 17, further comprising a four-quadrant power meter coupled to the power output that determines output power of the power supply system.

27. (original) The power supply system of claim 17, wherein the at least one power module includes a two-quadrant power meter that determines output power of the power module.

28. (original) The power supply system of claim 17, further comprising an output fuse coupled to the power output, and a detection circuit, coupled to the output fuse and to the first controller that detects a voltage across the output fuse.

29. (original) The power supply system of claim 17, wherein each of the first controller and the second controller are adapted to receive an input signal from the frame, and based on a state of the input signal, to function as a main controller or a redundant controller.

30. (currently amended) The power supply system of claim 17, wherein the first controller includes a memory device, and is configured to sense an output voltage at the power output, and compare the output voltage with upper and lower threshold levels derived from data contained in the memory device to determine if the output voltage is within a predetermined range.

31. (currently amended) The power supply system of claim 30, wherein the first controller is configured to sense an output current at the power output, compare the output current with a short circuit current value, compare the output voltage with an output short circuit voltage value, and provide indication of a short circuit present at the output if the output current exceeds the short circuit current value and the output voltage is less than the output short circuit voltage value.

32. (original) A power supply system comprising:

an input to receive input power having a first input phase line, a second input phase line and a neutral input line;

an output to provide output power, the output having a first output phase line, a second output phase line and a neutral output line;

a battery that provides battery power; and

a controller coupled to the input, to the output and to the battery and configured to control the power supply system to provide the output power from at least one of the input power and the battery power;

wherein the controller is configured to detect an input phase difference between the first input phase line and the second input phase line, and to provide output power with an output phase difference between the first output phase line and the second output phase line substantially equal to the input phase difference.

33. (original) The power supply system of claim 32, wherein the controller is configured to measure an input voltage, compare the input voltage with a threshold voltage, and implement a current reduction scheme to lower input current to the power supply system when the input voltage is less than the threshold voltage.

34. (original) The power supply system of claim 33, wherein the current reduction scheme includes lowering a charge current to the battery.

35. (original) A power supply system comprising:

an input to receive input power;

an output to provide output power;

a battery that provides battery power;

power circuitry that receives the input power and the battery power and provides the output power from at least one of the battery power and the input power; and

a controller coupled to the input, to the output, to the power circuitry, and to the battery and configured to control the power supply system;

wherein the controller includes a storage device that stores operational settings for the power supply system, wherein the controller is configured to sense an output voltage at the output, and compare the output voltage with upper and lower threshold levels derived from the operational settings contained in the storage device to determine if the output voltage is within a predetermined range.

36. (original) The power supply system of claim 35, further comprising a user input device coupled to the controller, and wherein the controller is configured to receive updated operational settings for the power supply system from the user input device, update the operational settings in the storage device, and update the upper and lower threshold levels based on the updated operational settings.

37. (original) The power supply system of claim 35, further comprising a bypass device, coupled between the input and the output, the bypass device having an open state and having a closed state in which the input is electrically coupled through the bypass device to the output to provide the input power to the output, wherein the controller is configured to control the bypass device to switch to the closed state if the output voltage is outside the predetermined range for greater than a predetermined period of time.

38. (original) The power supply system of claim 37, wherein the controller is configured to detect a short circuit at the output, and inhibit closing of the bypass device.

39. (original) The power supply system of claim 37, wherein the storage device in the controller includes an EEPROM.

40. (original) A power supply system comprising:

a frame;

a power input to receive input power from a power source;

a power output to provide output power to a load;

at least one battery module mounted in the frame and having a battery output that provides battery power;

at least one power module mounted in the frame and coupled to the power input to receive the input power, coupled to the battery output to receive the battery power, and coupled

to the power output to provide the output power from at least one of the battery power and the input power;

a first controller module, mounted in the frame, coupled to the at least one power module and the at least one battery module; and

a first cold start button operatively coupled to the at least one battery module;

wherein the power supply system is configured to be powered on from battery power with no input power present from a powered down mode in which there is no current being drawn from the battery when the first cold start button is activated by a user.

41. (original) The power supply system of claim 40, further comprising:

a second controller module mounted in the frame, the second controller module being substantially similar to the first controller module and functioning as a redundant controller upon failure of the first controller module; and

a second cold start button operatively coupled to the at least one battery module;

wherein the power supply system is configured to be powered on from battery power with no input power present from a powered down mode in which there is no current being drawn from the battery when either the first cold start button or the second cold start button is activated.

42. (original) A power supply system comprising:

a frame;

a power input to receive input power from a power source;

a power output to provide output power to a load;

at least one battery module mounted in the frame and having a battery output that provides battery power;

at least one power module mounted in the frame and coupled to the power input to receive the input power, coupled to the battery output to receive the battery power, and coupled to the power output to provide the output power from at least one of the battery power and the input power;

a first controller coupled to the at least one power module; and

a second controller, substantially similar to the first controller, coupled to the first controller, and coupled to the at least one power module;

wherein each of the first controller and the second controller includes means for measuring operational parameters of the power supply system and means for storing operational parameters measured by the first controller and measured by the second controller.

43. (original) The power supply system of claim 42, wherein the first controller and the second controller include means for establishing one of the first controller and the second controller as a main controller and for establishing one of the first controller and the second controller as a redundant controller, and means for passing control of the power supply system from the main controller to redundant controller upon failure of the main controller.

44. (original) The power supply system of claim 43, wherein the at least one power module includes a plurality of power modules, and the at least one battery module includes a plurality of power modules.

45. (original) The power supply system of claim 43, further comprising a communications bus for providing duplex communications between the first controller and the second controller and means for establishing the main controller as master of the communications bus and for establishing the redundant controller as master of the communications bus upon failure of the main controller.

46. (original) The power supply system of claim 42, wherein the power input is configured to receive input power having a first input phase line, a second input phase line and a neutral input line, further comprising means for detecting an input phase difference between the first input phase line and the second input phase line, and means for providing output power having a first output phase line, a second output phase line and a neutral output line, with an output phase difference between the first output phase line and the second output phase line substantially equal to the input phase difference.

47. (original) The power supply system of claim 42, further comprising means for starting the power supply system from battery power with no input power present.

48. (original) The power supply system of claim 47, further comprising means for isolating battery voltages during a power down mode with no input power present such that there is substantially zero current from the battery module, and wherein the means for starting includes means for starting the power supply system from the power down mode.

49. (currently amended) The power supply system of claim 42, further comprising means for reducing input current draw of the power supply system upon detection that ~~the~~ an input voltage of the input power is less than a predetermined threshold.

50. (original) The power supply system of claim 49, wherein the means for reducing input current draw include means for reducing battery charging current.

51. (original) The power supply system of claim 42, further comprising means for measuring active power at the power output.

52. (original) The power supply system of claim 42, wherein the at least one power module includes means for measuring output power of the power module for positive output voltages and for positive and negative output currents.

53. (original) The power supply system of claim 42, further comprising an output fuse coupled to the power output, and means for detecting a voltage across the output fuse.

54. (original) The power supply system of claim 42, further comprising means for storing operational parameters for the power supply system and means for comparing an output voltage at the power output with upper and lower threshold levels derived from the operational parameters to determine if the output voltage is within a predetermined range.

55. (original) The power supply system of claim 54, further comprising means for bypassing the at least one power module to provide input power to the power output, and means for detecting a short circuit at the power output and disabling the bypass means.

56. (original) A power supply system comprising:

a power input to receive input power from a power source;

a power output to provide output power to a load;

at least one battery module having a battery output that provides battery power;

at least one power module coupled to the power input to receive the input power, coupled to the battery output to receive the battery power, and coupled to the power output to provide the output power;

a first controller coupled to the at least one power module;

a second controller, coupled to the first controller, and coupled to the at least one power module; and

a communications bus coupled to the first controller, the second controller and the at least one power module to provide duplex communication between the first controller, the second controller and the at least one power module; and

means for establishing the first controller as master of the communications bus and for establishing the second controller as master of the communications bus upon failure of the first controller.

57. (original) The power supply system of claim 56, wherein the first controller and the second controller include means for establishing one of the first controller and the second controller as a main controller and for establishing one of the first controller and the second controller as a redundant controller, and means for passing control of the power supply system from the main controller to the redundant controller upon failure of the main controller.

58. (original) The power supply system of claim 57, wherein the at least one power module includes a plurality of power modules, and the at least one battery module includes a plurality of power modules.

59. (original) The power supply system of claim 56, wherein the power input is configured to receive input power having a first input phase line, a second input phase line and a neutral input line, further comprising means for detecting an input phase difference between the first input phase line and the second input phase line, and means for providing output power having a first output phase line, a second output phase line and a neutral output line, with an output phase difference between the first output phase line and the second output phase line substantially equal to the input phase difference.

60. (original) The power supply system of claim 56, further comprising means for starting the power supply system from battery power with no input power present.

61. (original) The power supply system of claim 60, further comprising means for isolating battery voltages during a power down mode with no input power present such that there is substantially zero current from the battery module, and wherein the means for starting includes means for starting the power supply system from the power down mode.

62. (original) The power supply system of claim 56, further comprising means for reducing input current draw of the power supply system upon detection that the input voltage is less than a predetermined threshold.

63. (original) The power supply system of claim 62, wherein the means for reducing input current draw include means for reducing battery charging current.

64. (original) The power supply system of claim 56, further comprising means for measuring active power at the power output.

65. (original) The power supply system of claim 56, wherein the at least one power module includes means for measuring output power of the power module for positive output voltages and for positive and negative output currents.

66. (original) The power supply system of claim 56, further comprising an output fuse coupled to the power output, and means for detecting a voltage across the output fuse.

67. (original) The power supply system of claim 56, further comprising means for storing operational parameters for the power supply system, and means for comparing an output voltage at the power output with upper and lower threshold levels derived from the operational parameters to determine if the output voltage is within a predetermined range.

68. (original) The power supply system of claim 67, further comprising means for bypassing the at least one power module to provide input power to the power output, and means for detecting a short circuit at the power output and means for disabling the bypass means.

69. (original) A power supply system comprising:

an input to receive input power having a first input phase line, a second input phase line and a neutral input line;

an output to provide output power, the output having a first output phase line, a second output phase line and a neutral output line;

a battery that provides battery power;

a controller coupled to the input, to the output and to the battery and configured to control the power supply system to provide the output power from at least one of the input power and the battery power; and

means for detecting an input phase difference between the first input phase line and the second input phase line, and providing output power with an output phase difference between the first

output phase line and the second output phase line substantially equal to the input phase difference.

70. (original) The power supply system of claim 69, further comprising means for reducing input current to the power supply system when input voltage is less than a threshold voltage.

71. (original) The power supply system of claim 70, wherein the means for reducing input current includes means for lowering a charge current to the battery.

72. (original) A power supply system comprising:

an input to receive input power;

an output to provide output power;

a battery that provides battery power;

power circuitry that receives the input power and the battery power and provides the output power from at least one of the battery power and the input power;

a controller coupled to the input, to the output, to the power circuitry, and to the battery and configured to control the power supply system; and

means for storing operational settings for the power supply system and comparing an output voltage with upper and lower threshold levels derived from the operational settings to determine if the output voltage is within a predetermined range.

73. (original) The power supply system of claim 72, further comprising means for receiving updated operational settings from a user, and means for modifying the upper and lower threshold levels based on the updated operational settings.

74. (original) The power supply system of claim 72, further comprising means for bypassing the power circuitry to provide input power to the power output, and means for detecting a short circuit at the power output and means for disabling the bypass means.

75.-77. (canceled)

78. (original) A method of providing redundant control of an uninterruptible power supply having a first controller and a second controller, the method comprising:

determining a first set of values corresponding to operational parameters of the uninterruptible power supply using the first controller;

determining a second set of values corresponding to the operational parameters of the uninterruptible power supply using the second controller;

storing the first set of values and the second set of values in the first controller;

storing the first set of values and the second set of values in the second controller;

controlling output power of the uninterruptible power supply using the first controller; and

upon failure of the first controller, controlling the output power of the uninterruptible power supply using the second controller.

79. (original) The method of claim 78, wherein the uninterruptible power supply includes a communications bus, and the method further comprising:

controlling communications on the communications bus using the first controller; and upon failure of the first controller, controlling communications on the communications bus using the second controller.

80. (original) The method of claim 78, wherein the uninterruptible power supply has a power input that is configured to receive input power having a first input phase line, a second input phase line and a neutral input line, and wherein the method further comprises:
detecting an input phase difference between the first input phase line and the second input phase line; and

providing output power having a first output phase line, a second output phase line and a neutral output line, with an output phase difference between the first output phase line and the second output phase line substantially equal to the input phase difference.

81. (original) The method of claim 78, wherein each of the first controller and the second controller includes a cold start button, and wherein the method further comprises controlling the uninterruptible power supply to be powered on from battery power with no input power present when one of the cold start buttons is activated by a user.

82. (original) The method of claim 78, further comprising:
detecting input voltage and input current to the uninterruptible power supply; and
reducing input current draw of the uninterruptible power supply upon detection that the input voltage is less than a predetermined threshold.

83. (original) The method of claim 82, wherein reducing input current draw includes reducing battery charging current in the uninterruptible power supply.

84. (original) The method of claim 78, wherein the uninterruptible power supply includes an output fuse and wherein the method further comprises detecting a voltage across the output fuse to check the status of the fuse during operation of the uninterruptible power supply.

85. (original) The method of claim 78, wherein the first controller includes a memory device, and wherein the method further comprises:
sensing an output voltage at an output of the uninterruptible power supply; and
comparing the output voltage with upper and lower threshold levels derived from data contained in the memory device to determine if the output voltage is within a predetermined range.

86. (original) The method of claim 85, further comprising:
sensing an output current at the output;

comparing the output current with a short circuit current value;
comparing the output voltage with an output short circuit voltage value, and
providing indication of a short circuit present at the output if the output current exceeds the short circuit current value and the output voltage is less than the output short circuit voltage value.

87. (canceled)

88. (currently amended) ~~The method of claim 87,~~ A method of controlling an uninterruptible power supply system having a first controller, a second controller, at least one power module, and a communications bus coupled between the first controller, the second controller and the at least one power module, the method comprising:

controlling output power of the uninterruptible power supply and communications over the communications bus using the first controller; and

upon failure of the first controller, controlling the output power and communications over the communications bus using the second controller;

wherein the uninterruptible power supply has a power input that is configured to receive input power having a first input phase line, a second input phase line and a neutral input line, and wherein the method further comprises:
detecting an input phase difference between the first input phase line and the second input phase line; and
providing output power having a first output phase line, a second output phase line and a neutral output line, with an output phase difference between the first output phase line and the second output phase line substantially equal to the input phase difference.

89. (currently amended) ~~The method of claim 87,~~ A method of controlling an uninterruptible power supply system having a first controller, a second controller, at least one power module, and a communications bus coupled between the first controller, the second controller and the at least one power module, the method comprising:

controlling output power of the uninterruptible power supply and communications over the communications bus using the first controller; and

upon failure of the first controller, controlling the output power and communications over the communications bus using the second controller;

wherein each of the first controller and the second controller includes a cold start button, and wherein the method further comprises controlling the uninterruptible power supply to be powered on from battery power with no input power present when one of the cold start buttons is activated by a user.

90. (currently amended) ~~The method of claim 87, further comprising:~~ A method of controlling an uninterruptible power supply system having a first controller, a second controller, at least one power module, and a communications bus coupled between the first controller, the second controller and the at least one power module, the method comprising:

controlling output power of the uninterruptible power supply and communications over the communications bus using the first controller; and

upon failure of the first controller, controlling the output power communications over the communications bus using the second controller;

detecting input voltage and input current to the uninterruptible power supply; and

reducing input current draw of the uninterruptible power supply upon detection that the input voltage is less than a predetermined threshold.

91. (original) The method of claim 90, wherein reducing input current draw includes reducing battery charging current in the uninterruptible power supply.

92. (original) The method of claim 90, wherein the uninterruptible power supply includes an output fuse and wherein the method further comprises detecting a voltage across the output fuse to check the status of the fuse during operation of the uninterruptible power supply.

93. (original) The method of claim 90, wherein the first controller includes a memory device, and wherein the method further comprises:
sensing an output voltage at an output of the uninterruptible power supply; and
comparing the output voltage with upper and lower threshold levels derived from data contained in the memory device to determine if the output voltage is within a predetermined range.

94. (original) The method of claim 93, further comprising:
sensing an output current at the output;
comparing the output current with a short circuit current value;
comparing the output voltage with an output short circuit voltage value, and
providing indication of a short circuit present at the output if the output current exceeds the short circuit current value and the output voltage is less than the output short circuit voltage value.

95. (original) A method of providing uninterruptible output power in a power supply having an input to receive input power having a first input phase line, a second input phase line and a neutral input line, and an output to provide output power, the output having a first output phase line, a second output phase line and a neutral output line, the method comprising:
detecting an input phase difference between the first input phase line and the second input phase line; and
providing output power with an output phase difference between the first output phase line and the second output phase line substantially equal to the input phase difference.

96. (currently amended) The method of claim 95, further comprising reducing input current to the power supply when ~~the~~ an input voltage at the input is less than a threshold voltage.

97. (original) The method of claim 96, wherein reducing input current includes lowering a charge current to at least one battery in the power supply.

98. (original) A method of controlling output power in an uninterruptible power supply having an input to receive input power, an output to provide output power, a battery that provides battery power, power circuitry that receives the input power and the battery power and provides the output power from at least one of the battery power and the input power, and a controller coupled to the input, to the output, to the power circuitry, and to the battery and configured to control the power supply system, the method comprising:
storing operational settings for the uninterruptible power supply in a storage device; and
comparing an output voltage with upper and lower threshold levels derived from the operational settings to determine if the output voltage is within a predetermined range.

99. (original) The method of claim 98, further comprising:
receiving updated operational settings from a user;
modifying the upper and lower threshold levels based on the updated operational settings.

100. (original) The method of claim 98, wherein the power supply includes a bypass device to couple the input to the output to bypass the power circuitry, and wherein the method further comprises:
detecting a short circuit at the power output; and
preventing actuation of the bypass device while the short circuit is present.